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Ringgold, U. S. N.; U. S. S. *Sea-Gull,* Captain Robert E. Johnson, U. S. N.; U. S. S. *Flying Fish,* Captains William M. Walker, U. S. N., and R. F. Pinkney, U. S. N.

Officers: Lieutenant Overton Carr, U. S. N.; Lieutenant James Alden, U. S. N.; Commandant Samuel R. Knox, U. S. N.; Master James H. North, U. S. N.; Passed Mid. Henry Eld, U. S. N.; Passed Mid. William Reynolds, U. S. N.; Passed Mid. George M. Totten, U. S. N., and many other officers and scientists.

1842. Voyage to West Antarctica, probably as far as Alexander Land. Captain William H. Smiley.

1848. Voyage to Antarctic Ocean. *Junior,* B. S. Osbon.

1853. Discovery of Heard Island. Bark *Oriental,* Captain J. J. Heard.

1853. Voyage to South Shetland. Bark *Sarah E. Spear,* Captain Pendleton.

1874, 1875-1876, 1878, 1879-1880. Four voyages to West Antarctica, with landings on Palmer Land. Captain Andrew J. Eldred, generally in schooner *Thomas Hunt.*

1876-1877. Voyage to South Shetlands. *Florence,* Captain James Buddington; Mate —— King.

Francis Allen, Captain —— Glass.

1879-1880. Voyage to Powell Islands, South Shetlands and Graham Land. Schooner *Express,* Captain Thomas B. Lynch.

1888-1889. Voyage to South Shetlands. Schooner *Sarah W. Hunt,* Captain James Buddington. Buddington has made several other voyages.

1893. Voyage to Bouvet Island. *Francis Allen,* Captain Joseph J. Fuller.

DEVELOPMENT OF MAP-MAKING IN AUSTRIA.

BY

PROFESSOR DR. EUGEN OBERHUMMER.

Translation of an Extract from his Paper "Die Entwicklung der Erdkunde in Oesterreich seit der Mitte des 19. Jahrhunderts" (pp. 439-443). *Mitt. der K. K. Geogr. Gesellschaft in Wien, Band 51, No. 11 & 12, Wien 1908.*

Turning from the sphere of instruction and of the scientific cultivation of geography at the high schools, to consider those governmental and private organizations which perform the practical geographic work or preliminary work, our first thought turns to the most important and most indispensable basis of all geographic study, the map. While formerly, even as late as the 16th and 17th centuries, geographers and cosmographers themselves endeavoured to construct the picture of the globe and of the several countries, mostly from very scanty and unreliable data, and while this work still falls to their share in imperfectly explored regions, the rising demand for maps which shall contain not merely the general outlines but the most detailed and accurate topographic picture possible has caused the task of their preparation to pass from the hands of individuals into those of great governmental institutions. The eminently practical interest which the preparation of good topographic maps presented, first and foremost, for warfare and national defense was the reason why in most European countries, in the course of the 18th and 19th centuries, this work was taken in hand by the military administration. In Austria the decisive change took place under Maria Theresa and Joseph II, but the military surveys of that period have remained for the most part unpublished.*

It was only under Emperor Francis I that the publication of topographic maps of the various crown lands was undertaken on the basis of a new survey. When Emperor Francis Joseph I ascended the throne, that object had been attained only as regards the Alpine countries and Moravia; the representation of the other crown lands was at that time based as yet on very old maps, though of the highest merit, considering the time of their compilation, the surveys under Joseph II not having been published. Thus Bohemia was based on the map of Johann Christ. Müller (1720), Galicia on that of J. Liesganig (1780), Hungary on the maps of J. Chr. Müller (1709) and L. v. Lipszky (1806). It was only in 1849-1860 that the new crown land map of Bohemia appeared, and in 1865 the first sheets of Hungary were issued. Only a small part of that country had been thus completed when it was recognized that with the methods till then prevalent, and the slow process of reproduction by copper engraving, the extension of the map over all Hungary, Croatia and Galicia would require a disproportionate length of time, while on the other hand the crown land maps hitherto published (Salzburg 1810, Archduchy of Austria 1813, revised in 1843, etc.) were in part considerably antiquated.†

A thorough remedy could only be found in a complete new survey. After careful preparation (1869-1872), that vast work was finished for the entire monarchy in an unprecedentedly brief time (1873-1889), which, aside from a considerable increase in the working force, was only made possible by the new process of reproduction by heliogravure. The Imperial-Royal Military-Geographic Institute had thus performed an achievement which in rapidity and in unity of execution was unprecedented in the history of topographic map works, and has remained unequalled; the only work that can be, in some measure, compared with it is the excellent resurvey of the kingdom of Italy, which, with a smaller area, required a longer time. But when we foot up the total of what was done for the Monarchy in cartographic work during the reign of our Emperor, from the continuation of the old crown-land maps and the new detailed survey, together with the incident astronomic-geodetic preliminary work, to the revision of the detailed map and the most recent precision surveys, and when we compare this with the conditions before 1848, we find that an equally vast advance in national cartography during the reign of one monarch can hardly be met with anywhere, unless it be the mapping of the British Islands and the gigantic work of the Indian Atlas, during the equally long reign of Queen Victoria.

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* E. Oberhummer: Oesterreich-Ungarn im Kartenbilde der Renaissance. *Mitt. der K. K. Geogr. Gesellsch.* 1907, pages 92-100.

† Data on the state of cartographic work in the first period of the reign of Emperor Francis Josef I are found in the reports by E. v. Sydow in *Pet. Mitt.* 1857, page 57 *et seq.*, and *Geogr. Jahrb.* I (1866), page 365 *et seq.*; IV (1872), page 526 *et seq.*; on the older maps, in the excellent monograph by Paldus, Joh. Christ. Müller. Wien 1907 (*Mitt. des K. u. K. Kriegsarchivs*, III Folge, Bd. V), exhaustively discussed by K. Peucker in the *Mitt. der K. K. Geogr. Gesellsch.* 1908, pages 149-160.

The activity of the Military-Geographic Institute, as everybody knows, was not confined to our monarchy. Aside from the extension of the old and new general maps over all central Europe, the Institute found a productive field of work first in Italy, the land of its birth,[*] and next in the Balkan peninsula, which touches our interests so closely. Hardly had the Italian surveys been terminated with the great topographic map of central Italy (1856), when the work in the southeast, whither the Crimean war attracted the attention of the whole world, began with the survey of Wallachia, completed in a surprisingly short time (1856-57). Later followed the reconnaissances in Albania and Macedonia, the general maps of the Balkan countries and of Greece, the detailed maps of Bosnia, Herzegovina and Montenegro, and the triangulation of Greece, works which, combined with the marine charts of the British Admiralty and the Russian war survey in the Balkans in 1878, as well as the Servian national survey, constitute the essential basis of the cartography of the Balkan peninsula and have been worked up after a uniform system in the new General Map.[†]

So far as the coasts of the Adriatic are concerned, there exists a body of first-class material in the surveys of the Imperial Royal Navy (K. u. K. Kriegsmarine), beginning with 1866.* The nature of that organization causes its work to be extended beyond the home land much farther even than that of the army. The expedition of the "Novara" (1857-1859) and the two Austrian Polar expeditions (1872-1874 and 1882-1883) were initiated essentially with the cooperation of the Navy. The oceanographic investigation of the basin of the Eastern Mediterranean and of the Red Sea owes its most important foundation to the work of the "Pola" (1890-1898). To these are to be added the official reports on the voyages of individual warships, which contain valuable material especially for southern and eastern Asia, as well as private publications by officers of the Navy.†

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[*] Originating in the "Deposito de la guerra," established in Milan in 1800 on the model of the French "Dépôt de la guerre," the Institute was in 1839 transferred to Vienna, where it was united with the "Topographico-lithographic Bureau" of the Quartermaster-General's Staff, existing there since 1806, into one organization under the name of Imperial and Royal Military-Geographic Institute. See "Das K. u. K. Militärgeographische Institut zu Beginn des 20. Jahrhunderts." Vienna, 1901.

[†] Details may be found in V. v. Haardt, "Die Kartographie der Balkanhalbinsel im 19. Jahrhundert." Wien 1903. (*Mitt. des K. u. K. Militärgeogr. Institutes*, Bd. 21 und 22). *Idem*, "Die Tätigkeit des K. u. K. Militärgeogr. Institutes in den letzten 25 Jahren." Wien 1907. *Idem* in Umlauft's "Die Pflege der Erdkunde in Oesterreich 1848–1898." *Festschrift* der K. K. Geogr. Gesellsch., verfasst von Friedrich Umlauft. Wien 1898. XXIV and 318 pages. (*Mitt. der K. K. Geogr. Gesellsch.*, Band 41, Heft 12. Pages 83 *et seq.* and 93 *et seq.*

It is not possible here to enter into the details of the work of the Marine Observatory at Pola. Similarly, as regards the geomagnetic survey of the monarchy (1889-1894), the progress in the measurement of a degree and the determination of gravitation, with which the name of Rovert von Sterneck is permanently connected. We have to be content with a brief mention and with a reference to the respective sections of the festal address by Umlauft‡ as well as to the recent official publications. Neither is it possible to discuss in detail the praiseworthy achievements of private and school cartography.§ But there is one branch of cartography activity which we can not pass in silence, since it is connected with one of the most important auxiliary sciences of geography, to wit, geology.

Just as the map forms the indispensable basis of all geographic knowledge, so our present conception of geography, our understanding of the forms of the earth's surface, presupposes essentially a knowledge of its geologic composition. In this respect, too, the period elapsed since the middle of the last century constitutes a period of complete reorganization of our knowledge. The main share of this, of course, belongs to the K. K. Geologische Reichsanstalt, which was called into life in the very first year of his Majesty's reign (1849). It is not possible to indicate, except in the most general outline, what that organization has accomplished for the geologic investigation of the entire monarchy, as well as for the

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* v. Haardt in Umlauft, p. 86, 108 *et seq.* J. v. Luksch, *ibid.*, p. 52 *et seq.*

† V. v. Haardt, "Die Kriegsmarine im Dienste der geographischen Wissenschaft," in Umlauft, *loc. cit.*, pages 107-118. J. Luksch, "Ueber den Anteil der Monarchie an der Erweiterung der maritimen Erdkunde." *Ibid.*, pages 51-65.

‡ A. v. Kalmár, page 16 *et seq.* (measurement of a degree); K. Haas, page 21 *et seq.* (determination of gravitation); J. Liznar, page 29 *et seq.* (geomagnetism).

§ Some data on this subject may be found in Umlauft, page 89 *et seq.*

Austrian part of it, since the foundation of the Royal Hungarian National Institute (1869); nor will the time permit me to make individual mention of the great number of eminent investigators who were active in the service of the Institute. I will refer only to one of the accomplished directors of the Institute, the former President of our Society, Franz von Hauer. To him we owe the greatest advance in the clearing up of the Alpine deposits, which about the middle of the last century seemed as yet a hopeless riddle; together with the first attempt at a general geologic map of the entire monarchy (1867-1871), a work which has permanently laid down the main outlines of its geologic structure, and which, despite the wealth of recent detailed investigations, is still indispensable.*

The long-felt want of a geologic special map was recently met by the issue of such a map on the basis of the new topographic special map, the first sheets of which were published ten years ago on the occasion of his Majesty's golden jubilee as Emperor.† This enterprise, together with the one which the Polish Academy of Cracow has undertaken for Galicia, now places Austrian geology worthily alongside of similar work in other countries, especially Germany and Switzerland. During the past ten years the great work has steadily advanced, although the difficulties of accurate mapping are unusually great, in view of the extent of the national domain and the nature of the configuration, as well as of the geologic structure. (*Translation by Robert Stein.*)

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* Hauer's activity is described in detail in the comprehensive obituary by E. Tietze, "Franz von Hauer." Wien 1900. (*Jahrb.* der K. K. Geolog. Reichsanstalt, Band 49.)

† F. v. Richthofen, "Die neue geologische Karte von Oesterreich." *Zeitschrift* der Gesellschaft für Erdkunde zu Berlin, 1898, pages 355-366.

THE SEVENTEENTH MEETING OF GERMAN GEOGRAPHERS.

BY

W. JOERG.

The XVIIth meeting of German Geographers was held in Lübeck on June 1, 2 and 3, 1909. The attendance was the largest since the XIIIth meeting in Breslau in 1901, 379 persons being present, of whom 285 were active members having the right to vote. The German and Austrian universities were very fully represented by the following incumbents of geographical chairs: Brückner